

REMARKS

By the above amendment, pending claims 1, 3, 4 and 6 have been canceled without prejudice or disclaimer of the subject matter thereof, and new claims 7 - 10 have been presented directed to the apparatus and method of the present invention, wherein newly added independent claims 7 and 9 clarify features of the present invention, as discussed below.

At the outset, applicants submit that by the present amendment, the claims recite the feature of the present invention of effecting control of an optical disk apparatus, wherein a number of recording layers of an optical disk is larger than a number of buffer area of a memory. As described in the paragraph beginning at page 3, line 14 of the specification, in the conventional arts, the number of recording layers have been increased and with such increase in number of layers, "cache buffer memories must be provided in the number same to that of layers thereof" (emphasis added). As further described, providing the same number of recording layers and buffer areas presents problems, and in accordance with the present invention, as described in the paragraph beginning at page 4, line 9 and the paragraph bridging pages 4 and 5, the memorizing of area into a predetermined area of the memory is made based upon the frequency of access. More particularly, as shown in Fig. 3, there are 2 buffer areas, i.e., buffer area 301, buffer area "A", and buffer area 302, buffer area "B", while the number of recording layers is 3, as shown in Figs. 4 and 5, and as described in the paragraph at page 8, line 10, the buffer area A 301 is set to be an area for storing data which are accessed frequently, whereas the buffer area B 302 is an area for storing data which is accessed at a normal frequency. Likewise, in accordance with the flow chart of Fig. 1 and as described in the paragraph at page 11, line 15, in the step S207, "the obtained values of the

request frequency counters are compared with, for the each layer, thereby for determining on, into which area the information read out from the information recording disk 103 should be stored, between the buffer area A 301 (i.e., the area for use of the data which is accessed frequently) and the buffer area B 302 (i.e., the area for use of the data of general use)".

Applicants note that the aforementioned features are now recited in independent claims 7 and 9, wherein each of the claims essentially recite the feature, as now recited in claim 7, for example, of "wherein the plural number of information recording layers of the optical disk is larger than the plural numbers of buffer areas of the memory, and the processor effects control so as (a) to retrieve access frequency of transfer request for each of the plural number of recording layers, (b) to memorize following information which follows information, upon which the transfer request is made from the host computer, into the first buffer area when the access frequency of transfer requests of one of the plural number of recording layers is highest among the plural number of recording layers, and (c) to memorize the following information into the other buffer area when the access frequency of the transfer request of another of the plural number of recording layers is not the highest. Applicants submit that such features are not disclosed or taught in the cited art, as will become clear from the following discussion.

The rejection of claims 1, 3 - 4 and 6 under 35 USC 103(a) as being unpatentable over Naruse (JP 411016269A) further in view of Uehigashi (JP 2002230795A) and Watanabe et al (US 2002/0181356A1) is traversed, insofar as it is applicable to the present claims, and reconsideration and withdrawal of the rejection are respectfully requested.

Turning to Naruse, as described therein under the heading ABSTRACT, “SOLUTION: Cache buffer memories 14, 15 are provided corresponding to the 1st and 2nd recording layers of the optical disk 11”. (emphasis added). Thus, in accordance with the disclosure of Naruse, a buffer memory is provided for a respective recording layer. Accordingly, applicants submit that Naruse fails to disclose or teach the recited feature of the independent claims of this application that the number of information recording layers of the optical disk is larger than the number of buffer areas of the memory or the processor control based upon access frequency of transfer requests. Accordingly, applicants submit that claims 7 and 9 and the dependent claims recite features not disclosed or taught by Naruse in the sense of 35 USC 103 and all claims should be considered allowable thereover.

With respect to Uehigashi, as recognized by the Examiner, Uehigashi is directed to the problem of reducing a seek operation time of an optical pickup by taking into consideration of an access frequency to various data recorded on an optical disk, and thereby provides a controller which moves in advance the optical pickup 3 completing reading of arbitrary data to the leading address having the highest access frequency, and is made to stand by based on the leading address and access frequency information registered in the registration table. Thus, like Naruse, Uehigashi provides no disclosure or teaching of the recited features of the independent claims of this application that the plural number of information recording layers of the optical disk is larger than the plural number of buffer areas of the memory, and effecting control based upon the access frequency of the transfer request for each of the plural number of recording layers and to memorize following information which follows information, upon which the transfer request is made from the host-computer, into the first buffer area when the access frequency of the

transfer requests of one of the plural number of recording layers is highest among the number of recording layers, and to memorize the following information into the other buffer area when the access frequency of the transfer requests of another of the plural number of recording layers is not the highest. Thus, applicants submit that Uehigashi taken alone, or in combination with Naruse, fails to provide the recited features of independent claims 7 and 9 and the dependent claims, and such claims should be considered allowable thereover.

With regard to Watanabe et al, the Examiner cites Watanabe et al as teaching “a memory which is variable in size dependent on the frequency of errors occurring on the optical disk ([033] [108]-[109])” (emphasis added). Applicants submit that the frequency of errors in Watanabe et al has no relation to the frequency of transfer requests, and even assuming arguendo that Watanabe et al could somehow be combined with Naruse and Uehigashi et al, Watanabe et al, taken alone, or in such combination, fails to provide the recited features of claims 7 and 9 and the dependent claims that the plural number of information recording layers of the optical disk is larger than the plural number of buffer areas of the memory, and that the processor effects control so as to retrieve access frequency of transfer requests for each of the plural number of recording layers, to memorize following information into the first buffer area when the access frequency of transfer requests of one of the plural number of recording layers is highest among the plural number of recording layers, and to memorize the following information into the other buffer area when the access frequency of the transfer requests of another of a plural number recording layers is not the highest. Thus, applicants submit that claim 7 and 9 and the dependent claims recite features not disclosed or taught in the proposed combination of references, and all claims should be considered allowable thereover.

In view of the above amendments and remarks, applicants request favorable action in this application.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 520.43638X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

/Melvin Kraus/ 

Melvin Kraus

Registration No. 22,466

MK/jla
(703) 312-6600